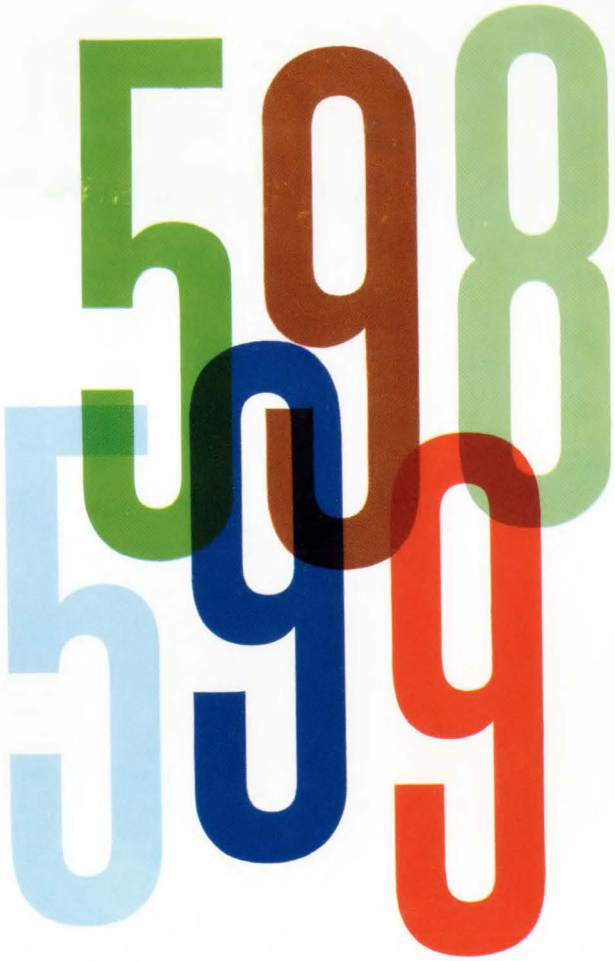


HIGH RESOLUTION
HEAVY DUTY
STANDARD OUTPUT

"Scotch" Brand Magnetic Tape for Instrumentation

Here's the ultra-smooth magnetic tape that combines superior high frequency performance with rugged wear

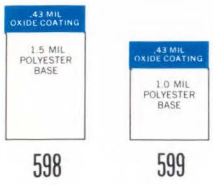
The tape is "Scotch" Brand High Resolution Heavy Duty Standard Output instrumentation tape. And here are the answers to some key questions about it.

1. What is the effect of the ultra-smooth oxide surface? More intimate head-to-tape contact. This results automatically in better high frequency response. (How the ultra-smooth oxide surface is achieved will have to remain a trade secret. Suffice it to say that it is a development that could be expected to come from 3M. For 3M pioneered the development of magnetic recording in the United States and has more than a half century of experience in precision coating techniques.)

2. What about resolution? The superior high frequency performance of this tape means high resolution, enabling you to pack more information in a given length of tape.

3. What wear-life does this tape have? Field tests indicate that it lasts 15 times as long as ordinary tapes.

4. What accounts for this extended wear-life? A rugged binder system similar to that used in "Scotch" Brand Video Tape. This binder system anchors the high potency oxide firmly to the polyester base. It resists the destructive effects of the high speeds, high temperatures, high pressures, and varying humidity so frequently encountered in present day applications.



High Resolution Heavy Duty Standard Output tapes shown in cross section.

5. What is the difference between 598 and 599? Both 598 and 599 have the same .43 mil coating of high potency oxide, and thus identical magnetic characteristics. The difference is in the base. No. 598 has a 1.5 mil polyester base for maximum strength; No. 599 has a 1.0 mil polyester base for 50% extra recording time.

6. For what applications is this tape especially useful? It is designed specifically for broad band data acquisition but is useful in all forms of short wave length recording.

7. Is this tape thoroughly proven? Yes. Thousands of rolls have been used successfully in satellite and missile testing.

8. Does this tape have silicone lubrication? Yes, like all "Scotch" Brand magnetic tapes, this tape has 3M's exclusive silicone lubrication (U. S. Patent No. 2654681). This dry lubrication allows the tape to glide smoothly over sensitive recording heads, with a minimum of friction and wear. Impregnated throughout the coating, the silicone lubricant lasts the life of each tape.

9. In what standard sizes are these tapes available? Popular standard widths of High Resolution Heavy Duty Tapes are ¼", ½", ¾", and 1". Standard lengths for 598 (1.5 mil base) are 1250', 2500', and 5000'. Standard lengths for 599 (1.0 mil base) are 1800', 3600', and 7200'. High Resolution Heavy Duty Tapes are supplied, in standard widths and lengths, on NAB hubs, on NAB reels, and on corrosion-free, aluminum heavy duty precision reels.

10. What about special orders? Widths and lengths of High Resolution Heavy Duty Tapes to meet most specialized requirements can be provided on special order. Contact your 3M Representative for details.

FORMERLY 8921

598 599

1.5 MIL BASE | 1.0 MIL BASE

PHYSICAL PROPERTIES

	598	599
Color	Black	Black
Base Material	Polyester	Polyester
Thickness in Mils		
Base	1.45	.92
Coating	.43	.43
Total	1.88	1.35
Slitting Tolerances—inches	+.000 −.004	+.000 −.004
Ultimate Tensile Strength		
¼″ Wide—Room Conditions	9#	7#
PSI—Room Conditions	25,000	25,000
PSI @ 150°F	20,500	20,500
Yield Strength		
5% Stretch in ¼″ Width	5.4#	3.6#
Elongation at Break	100%	100%
Coefficient of Friction	0.33	0.33
Residual Elongation	0.5%	0.5%
Toughness		
Tear—grams	26	12
Impact—kg—cms	100	70
Coefficient of Expansion*		
Humidity (units per % RH change)	1.1×10^{-5}	1.1×10^{-5}
Temperature (units per °F.)	2×10^{-5}	2×10^{-5}
Temperature Limits for Safe Use		
Low	— 40°F.	— 40°F.
High	+225°F.	+225°F.
Wear Ability**	15	15

MAGNETIC PROPERTIES

Intrinsic Coercivity (H_{ci})—oersteds	240	240
Retentivity (B_{rs})—gauss	875	875
Remanence (flux lines/¼″ tape)	0.6	0.6
Output at 1% Distortion—db†		
15 Mil Wave Length	0	0
Sensitivity—db†		
15 Mil Wave Length	+0.5	+0.5
1 Mil Wave Length	+2.5	+2.5
½ Mil Wave Length	+3.5	+3.5
¼ Mil Wave Length	+4.5	+4.5
Erasing Field—oersteds	800	800
Uniformity at 15 Mil Wave Length		
Within a Roll	± 3%	± 3%
Roll to Roll	±10%	±10%
Dropout Count††		
Errors/1 Roll	1 or less	1 or less

*These coefficients are unitless and represent the change per % relative humidity or degree Fahrenheit over the following ranges:
Humidity: 20% RH to 80% RH
Temperature: +30°F. to +130°F.

**Wear ability of standard instrumentation tape No. 408 is considered as "1". Relative wear ability of each additional tape is expressed as a multiple of this figure.

†At optimum bias for each tape. Output and sensitivity are referred to standard instrumentation tape No. 408, which is designated as "0". All other tapes are expressed as gradations from this reference point.

††Measured by recording 200 non-return-to-zero (NRZ) pulses per inch on a 0.035″ track. A reduction to less than 50% normal signal amplitude constitutes a signal error. Zero errors are measured by saturating the tape unidirectionally. Each spurious signal greater than 10% of normal signal amplitude constitutes a zero error. Errors per roll based on recording 7 tracks on rolls ½″ x 2500′.

The data in this pamphlet have been compiled from our own laboratories and from those of the film base manufacturers. The data are *average*, determined by experience, and can be used for comparative purposes. Tolerances are noted and defined where necessary.

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5925 Peachtree Industrial Boulevard
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6850 South Harlem Avenue
Argo P.O.
Bedford Park, Illinois

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Cincinnati 37, Ohio

CLEVELAND
12200 Brookpark Road
Cleveland 30, Ohio

DALLAS
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Dallas 28, Texas

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